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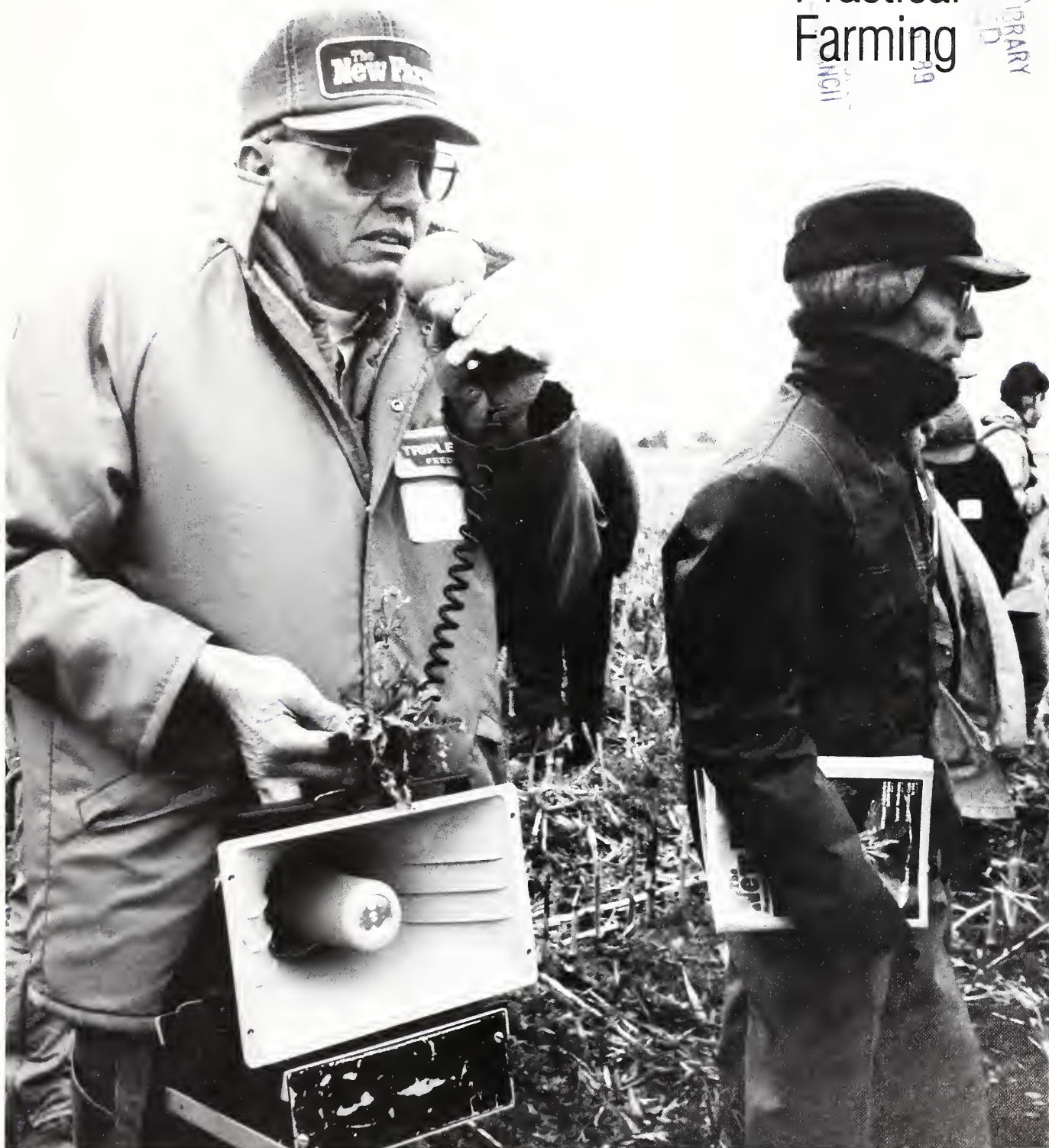
Soil  
Conservation  
Service

JULY 1988

Volume 9, Number 4

Practical  
Farming

USDA  
LIBRARY



**Cover:** Dick Thompson shares his experiences with cover crops and answers questions at a field day on his farm this spring. (Photo by Ron Nichols.)

*Soil and Water Conservation News* is the official magazine of the Soil Conservation Service. The Secretary of Agriculture has determined that publication of this periodical is necessary in the transaction of public business required by law of this Department. Use of funds for printing *Soil and Water Conservation News* has been approved by the Director of the Office of Management and Budget. *Soil and Water Conservation News* (ISSN-0199-9060) is published 12 times a year. Postage paid at Washington, D.C.

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**Subscriptions**  
Send subscription orders to: Superintendent of Documents U.S. Government Printing Office Washington, DC 20402

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# Comments from the SCS Chief:

## Practical Use of Agrichemicals

THE IDEA OF alternative agriculture is gaining ground in research and education efforts at the U.S. Department of Agriculture.

Alternative agriculture—sometimes called organic farming, sustainable agriculture, low-input farming, or regenerative agriculture—describes a wide range of farming styles and practices.

While some might envision the elimination of agrichemicals, most understand the concept to mean a rejection of the conventional wisdom, "If a little is good, a lot is better." For most, the emphasis is on minimizing the use of agrichemicals without drastically reducing crop yields or livestock production. In other words, it means the wise and prudent use of agrichemicals—a goal that most of us can share given today's production costs, thin profit margins, and concern for the environment.

Responsible and conservative use of pesticides, herbicides, and fertilizers just makes good sense to a smart farmer or rancher. But, as we also know, the use of these materials is crucial to the production of food and fiber in this country. Without fertilizers and pesticides, we would be producing less food at a higher cost. Also, without herbicides, producers in range country could lose the ability to control brush, which crowds out grass for grazing and uses water that could replenish streams.

We still have a lot to learn about the sensible, practical use of agrichemicals, because what's good for one area of the country isn't necessarily good for another.

Choice in agrichemical use must be up to the individual producer. Our job in SCS, in cooperation with conservation districts, is to help producers manage their total operation wisely and to offer the widest possible choice of cost-effective and environmentally sound farming systems with long-term production profitability as the basic goal.





# Practical Farming

## Giving Back To the Soil

**A**FTER 10 YEARS of farming, Dick and Sharon Thompson of Boone, Iowa, weren't satisfied with conventional ways of raising crops and livestock. They wanted to reduce their use of synthetic fertilizer and other agrichemicals; they wanted to quit taking from the soil and start giving back a little.

In 1967, they began concentrating on crop rotations and wise manure handling to control weeds and maintain yields on corn and soybeans. Today, they are using a combination of techniques including ridge tillage, crop rotations, manure spreading, and cover crops.

Cover crops control weeds, reduce fertilizer needs, and conserve soil. Said Dick Thompson, "Cover crops catch moisture and nitrogen that would otherwise get away from us."

Cover crops the Thompsons are experimenting with include hairy vetch, annual rye grass, sweet clover, oats, alfalfa, and orchardgrass. Thompson says a combination of hairy vetch and rye works well on his operation. The hairy vetch provides long-term soil building and greatly increases earthworm populations. Earthworm burrows, which help aerate and drain the soil, improve infiltration, decrease evaporation, and increase water storage and nutrient retention.

Audience during slide show and discussion on field day at the Thompson farm. Farmers say they always learn something from the Thompsons that they can apply on their own operations. (Photo by Ron Nichols)



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"With ridge tillage, herbicides are applied in a band instead of broadcast," he said. "You apply less, which makes good economic sense, and it helps to protect the quality of ground water."

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A strong advocate of cover crops in combination with ridge tillage and minimal use of herbicides and commercial fertilizer, Thompson admits that the practice requires careful management.

Thompson is president of Practical Farmers of Iowa, a grass-roots organization started about 3 years ago to study and develop practical, environmentally safe farming practices. The group is monitoring 24 on-farm research sites.

At one site, water coming off a ridge-tilled field will be monitored for nitrate levels. "We will never have zero nitrates," said Thompson, "because the natural mineralization of the soil makes nitrates available.

But we should be able to reduce the nitrates coming off by putting a cover crop on and closely managing any nitrogen applications."

Thompson says that he would like to see ridge tillage research and application move a little faster. "With ridge tillage, herbicides are applied in a band instead of broadcast," he said. "You apply less, which makes good economic sense, and it helps to protect the quality of ground water."

The Soil Conservation Service is testing soil loss on the Thompson farm. John Pingry, SCS conservation agronomist in the Iowa State office in Des Moines, said that the purpose of the project is to learn how the combination of ridge tillage, manure

applications, and crop rotations with meadow crops affects soil loss. Pingry said the information gathered will be used in making recommendations to other farmers.

The Rodale Research Center out of Emmaus, Pa., is working with the Thompsons on crop rotation and cover crop testing. The Regenerative Agriculture Association has conducted field tours of the 300-acre Thompson farm for the last 4 years.

The demonstration plots and field tours, as well as the Thompson's enthusiasm for what they are doing, bring thousands of visitors to their farm every year.

**Nancy M. Garlitz**, editor, *Soil and Water Conservation News* SCS, Washington, D.C.

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## USDA Researches Low-Input Farming

**T**HE U.S. DEPARTMENT of Agriculture (USDA) is targeting funds for research and education in low-input agriculture also known as organic, regenerative, alternative, or sustainable agriculture.

Following are USDA activities related to low-input farming:

- The Cooperative State Research Service is coordinating a series of low-input research projects with other USDA agencies, private organizations, colleges, and universities.
- The Cooperative Extension System (CES) has made low-input, sustainable agriculture one of its national initiatives. CES helps farmers increase their profits through cost-effective, environmentally sound production practices.
- The Agricultural Research Service is conducting extensive research in the area of low-input farming to be applied through an integrated farming system approach to meeting the needs of farmers.

- The National Agricultural Library (NAL) is operating an Alternative Farming Systems Information Center, which provides referrals and bibliographies from the AGRI-COLA database and serves as liaison with organizations that have related interests. For more information write to Alternative Farming Systems Information Center, National Agricultural Library, Room 111, Beltsville, MD 20705, or call (301) 344-3704.

- A new USDA technical center, known as ATRA (Appropriate Technology Transfer for Rural Areas), in Memphis, Tenn., provides sustainable agriculture information to farmers and rural administrators. The center's toll-free number is 1-(800)-346-9140.

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# Agriculture and The Environment

Peter C. Myers, Deputy Secretary of Agriculture, examines soil condition on field of soybeans planted into corn residue on his farm in Matthews, Mo. The farm is under a conservation system that includes conservation tillage, an animal waste management system, filter strips along field borders, windbreaks, wildlife habitat, and other practices. (Photo by Tim McCabe)



The U.S. Environmental Protection Agency's *EPA Journal* interviewed Peter C. Myers, Deputy Secretary of Agriculture, on his views on agriculture and the environment. Following is the text of the interview that appeared in the April issue of the *EPA Journal*:

**Q: The 1985 Farm Bill (the Food Security Act of 1985) is often touted as a major step toward placing environmental concerns in the mainstream of U.S. agricultural policy. On the other hand, the Farm Bill is also said to reduce government's role in agriculture. Does the same law really serve these two seemingly disparate purposes?**

**A:** The bill does try to make government programs more market-oriented, and I think that's where your second point is coming from, concerning a reduced government role. For instance, our loans to farmers are geared more closely to the market prices of commodities.

At the same time, from the standpoint of tying conservation and farm programs together, the Farm Bill increases government involvement in agriculture—very definitely. Of course, farmers do have the option of electing not to participate in Federal farm programs, in which case they're free to do whatever they

want to do with their land. But if farmers want to participate in Federal programs, then they're going to have to adopt reasonable conservation practices and avoid converting wetlands.

**Q: Why this new emphasis on the environment in our farm programs now—i.e., in the last couple of years or so, as opposed to 10, 15, or 20 years ago?**

**A:** We're clearly becoming more concerned in this country about what we're doing to our soil and water. In fact, that's what brought me to Washington in the first place. I saw what was happening to Missouri when, in the 1970's, we converted a lot of grassland into cropland, and that caused me to start looking at soil conservation problems. And the more I learned about soil conservation, the more I understood that it tied in with water quality—both surface water and underground aquifers.

The whole package of conservation and environmental issues just wraps together. We are becoming increasingly concerned about what we are doing to our environment. We want to continue our production of food for the next few centuries—and beyond—and we want to do so in a manner that conserves our soil resources, affords a reasonably clean environment, and sustains profitability for America's agriculture.

**Q: Was there a time in this country when farming was more environmentally sensitive than in recent decades?**

**A:** I don't think so. If you look at the history of farming in the United States, starting with the pilgrims on the east coast . . . they just farmed until the land was gone. The same thing was done in the southeast, with cotton. When the topsoil was gone, people just moved west.

Since we've reached the Pacific Ocean, there's no more moving away from the

“... we are finding—in Nebraska, in the Sandhills, for instance—that there will be a positive effect on water quality as a direct consequence of the Conservation Reserve.”

problems: we have to farm with what we've got. The point is we have a history of not recognizing and facing up to problems we've created. This began to change 50 years ago when the soil conservation movement was born. Hugh Hammond Bennett and others saw what was happening, and President Teddy Roosevelt also realized what was going on. I think that's when an awareness of soil conservation was first born. Of course, this was also the dustbowl era.

**Q: What has USDA done to enforce the Swampbuster policy established by the 1985 Farm Bill?**

**A:** Starting last year, farmers who come in to sign up for a farm program must sign a statement certifying that they have not converted a wetland for cropland use. And, of course, USDA personnel go out and spot-check compliance. Right now, we have 300 cases under investigation for possible violations of the Swampbuster policy.

I have seen some articles that say USDA is not enforcing the Swampbuster policy. In fact, we are enforcing it. I know we have the farmer's attention on this because many of them are reacting with righteous indignation. And I would submit that we have basically stopped the wholesale conversion of wetlands.

I think Swampbuster, on balance, is going to prove to be a good piece of legislation. I think we should leave it alone and let it function.

**Q: What about Conservation Reserve: how successful has this program been so far in terms of farmer signups? Has the turnout been disappointing?**

**A:** No, if you look at volume of acreage, we're ahead of schedule. Under Conservation Reserve, the goal is to retire 45 million acres of highly erodible cropland out of production for 10 years. At this point, we're approaching 27 or 28 million acres, depending on what we can accept from this last signup.

We're now getting some of the erosive land in southern Illinois, southern Indiana, and parts of Ohio. However, we may need to raise our bid levels in the Corn Belt. On the whole, we have probably paid a little too much for some lands, and probably not enough for others.

We are also going to have to go after land that could impact water, for instance. For example, we need to look at some of the hydrologic units in the Chesapeake Bay area.

The program has been, I think, an unqualified success, but we still have some fine tuning to do.

**Q: So you can consider water quality and underground aquifers when you accept land into the Conservation Reserve?**

**A:** Not necessarily, unless the land is highly erodible. The law does afford a lot of leeway, but our regulations do not at this time allow us to make aquifer damage a consideration for taking land into the program. On the other hand, we are finding—in Nebraska, in the Sandhills, for instance—that there will be a positive effect on water quality as a direct consequence of the Conservation Reserve.



We have just begun taking filter strips—strips of land along bodies of water—into the Conservation Reserve, regardless of erodibility. Since filter strips serve as “filters” for sediment and chemical loadings, this new policy is intended to have a positive impact on surface water quality.

**Q: Do you favor an expanded Conservation Reserve? If so, how should it be expanded?**

**A:** I do favor an expanded program, probably with the next farm bill in 1990—but with the stipulation that Conservation Reserve would be the only set-aside program that we would have.

There have been several proposals to expand the Conservation Reserve to 65 million acres. There is reason to be nervous about getting that much land out of production in addition to the normal set-aside acreage. With too much land out of production, we could be giv-

ing away our production capacity to other countries, and giving away our export markets.

I would support a farm bill that designated 65 million acres to Conservation Reserve as the only set-aside program in this country. Sixty-five million acres would be just about the right balance of land out of production in the United States—and it would be erodible land, and land that affects water quality. That makes sense to me.

**Q: For highly erodible cropland that remains in production, how strictly will USDA be enforcing the Conservation Compliance provision of the Farm Bill? What happens when the January 1990 deadline arrives?**

**A:** We intend for all soil conservation plans to be written by the end of 1989. Any farmer who is farming highly erodible land will have to have an approved plan and begin implementing it by January 1, 1990.



"We can't just point to agrichemicals as the bugaboo; we have to look at specifics—how and in what form we are using farm chemicals, on what crops, on what soil types."



At far left and near left, thousands of trees and shrubs were planted on CRP land in Whitman County, Wash., last spring. The plantings will protect fragile soils from erosion and provide habitat for wildlife. (Photos by Ron Nichols)

We will allow farmers 5 years to put their soil conservation plans fully in place—but this doesn't mean waiting until the fifth year, for instance, to start practicing conservation tillage. The law says farmers must be actively putting these plans to work.

We're giving farmers flexibility on their conservation plans. We're not out to put farmers out of business. On the contrary, it's our job to keep them in business but help them learn to be good stewards of their land. We intend to enforce conservation compliance, but we intend to do it with reason and balance.

Farmers with erodible land must sign a certification statement concerning their implementation of a conservation plan. USDA will spot-check about 10 percent of these farms per year—so that in 5 years, we'll have checked at least 50 percent of the farms involved. Generally, in 99 percent of

cases, we find that farmers are doing exactly what they've certified they would do.

**Q: On the use of farm chemicals ..., it seems that over the past couple of decades, U.S. farmers have greatly intensified their use of agrichemicals, always striving to obtain maximum possible crop yields per acre—even if the end result may be crop surplus at the expense of the environment. Is there a way out of this pattern?**

**A:** I would challenge that statement, that we have intensified the use of agrichemicals. We have *continued* the use of chemicals. I've been farming for three decades, and we used more punitive insecticides 30 years ago than we use now. On the other hand, we are using more herbicides than we did back then. We've always used commercial fertilizers.

Something we need to remember is that most commercial fertilizers are natu-

ral. Potash phosphate comes out of the ground. It's a natural element. Nitrogen comes out of the air. People tend to get uptight talking about chemical fertilizers when in fact these are natural fertilizers.

Nitrogen is our biggest problem. And we do get phosphorus overloading in some bodies of water, but this comes from a lot of different sources. I think farmers are beginning to learn how to manage their fertilizer application. As a result, I think we are going to be seeing a lot fewer problems related to runoff.

On the pesticides, particularly the herbicides, I really believe a lot of changes are coming in the next few years. I see farmers moving away from herbicides that contaminate ground water. After all, who are the biggest losers? Farmers. They're the biggest users of well water.

I think we're going to see a new breed of herbicides that will not damage the

environment. Maybe they'll be organic and biodegradable. Maybe they'll be bacterial pesticides—fungal herbicides, for example, which already exist in research stages.

**Q: So do you predict a decrease in agrichemical usage in the next decade or so?**

**A:** I see a change in the use profile, a movement toward more organic practices. Most of the major chemical companies are already doing research on biological pest controls in all kinds of shapes and forms.

Of course, *agrichemicals* is an all-encompassing word. We can't just point to agrichemicals as the bugaboo; we have to look at specifics—how and in what form we are using farm chemicals, on what crops, on what soil types. We cannot produce food for this country without using basic fertilizers because not enough livestock exist in the country to put back the basic nitrogen, phosphate, and potash

“Call it low-input, sustainable, or alternative agriculture, as you like: these terms are becoming more popular. USDA has been doing research in this area for years; we just haven’t labelled it as such.”

At right, alternating strips of corn and small grain help protect this Carroll County, Md., farm from soil erosion. (Photo by Tim McCabe)

At far right, corn residue protects the soil from erosion on this field of no-till soybeans in Iowa. (Photo by Gene Alexander)



that we take from the soil when we harvest crops. So we have to use fertilizer, but with intelligence.

In the use of agrichemicals as in other things, farmers are going to have to be better managers. Being a better manager will mean different things to different farmers, depending on crop, soil, and regional considerations.

**Q: What is USDA doing to promote the kinds of changes you’ve mentioned—to promote low-input agriculture, if that is the right term?**

**A:** Call it low-input, sustainable, or alternative agriculture, as you like: these terms are becoming more popular. USDA has been doing research in this area for years; we just haven’t labelled it as such. We now have contracts in four or five States for research specifically on what people are now calling alternative agriculture. I expect that most farmers will adopt a combination of alternative and traditional agricultural practices.

USDA has a big role to play in conducting the necessary research on alternative farming methods. It’s also up to us to make this knowledge available through outreach programs, not only to farmers, but also the people who manage lawns and gardens. The States also have an important role to play, through cooperative extension services, in imparting up-to-date information. So does the Soil Conservation Service in providing on-the-land technical assistance. So does EPA, through publications, for example.

**Q: Some people have described agriculture and the environment as a battleground right now. Would you agree?**

**A:** If you look at things that way, you could say there are battlegrounds all over—in the cities as more “people pressure” results in more sewage dumped into the Mississippi River or Lake Michigan, or whatever.

I don’t like to consider agriculture and the environment a battleground. I think that’s a hype. There’s a need to work with the environment more carefully as we use our renewable soil and water resources more intensely, again to accommodate more people pressure. The soil is a living entity, constantly changing. If you don’t believe that, just work with it for awhile. Also, we need to keep in focus that over many years America’s soil, water, and plant resources have contributed to our gross national product in a major way. Our timber resources, for example, have supplied jobs and millions of homes for Americans. Yet our timber resources today are generally of high quantity and quality and are better managed than 100 years ago. Certainly we need to work with each other. And I think we at USDA have good working relationships with EPA and are making a lot of progress together.

**Q: This is a deliberately broad question: Are farmers overregulated?**

**A:** Farmers generally think they are overregulated. Having been a farmer for 30 years, I don’t like anybody telling me what to do. But sitting in my present position, I can see that we, as a society, probably do need some regulations...just as we need penalties for speeding.

There is a punitive aspect to Conservation Compliance. If you fail to have a conservation plan, you lose access to farm benefits. On the other hand, the Conservation Reserve Program works through incentives. In general, we’re trying to use incentives more than punitive regulations.

Like beauty, “overregulated” is in the eye of the beholder. While the farmer is likely to tell you he is overregulated, a lot of people who are sensitive to the environment would say we’re not tough enough on farmers.



“... I think that farmers are having to become better managers from a business standpoint. At the same time, I see them becoming better managers from a conservation and environmental standpoint.”



**Q: Would you say that environmental regulation has a disproportionately bigger impact on small farmers than on larger agribusiness?**

**A:** Here again, the impacts felt by farmers depend on their methods of operation. For example, if you're a small farmer, and you use total mulch and manure and you monitor your runoff, you probably will not be hit hard by regulatory requirements. On the other hand, if you run a large farming operation and you depend entirely on herbicides for weed control, you might have some adjustment problems.

**Q: Has environmental regulation actually impeded the production of food and fiber in this country? In any other country?**

**A:** I can't speak for other countries, and I don't see it slowing us down right now in this country. But it could happen—if we lose some key herbicides, for instance, or if we get overly paranoid about fertilizer. Before we totally eliminate some of the

practices now being used, we need to have alternatives available.

There are exceptions—for instance, if a pesticide, like DDT, is obviously damaging to the environment, then its use should stop. There's no doubt about that. But there should be reasonable proof—not just suspicion, but scientific evidence for removing a product from the market. And farmers should be educated not to use it if they have some of the product left.

**Q: As a farmer, did you worry about using agricultural chemicals—your own exposure to them, their potential to contaminate ground and surface water? Are most farmers worried today?**

**A:** My wife and I have been testing the wells on our farm for years, having water samples analyzed for herbicides, etc. In our case, we've found no contamination. But there are many variables from

farm to farm—in the use of farm chemicals, management techniques, soil types, weather, etc.

Most farmers today are worried about farm chemicals. They are very aware of the issues because there's been good coverage by the press and by various agencies on problems with certain herbicides, for example, or too much manure getting into water supplies. With many farmers, the first perception is: this is somebody else's problem. But now farmers are beginning to look at their own operations, as I did. And farmers are becoming better and better managers as they become more knowledgeable. Farmers will resolve these kinds of problems on a voluntary basis if properly advised based on the facts.

**Q: More and more States are reporting ground water contamination as a result of normal agricultural uses of pesticides and fertilizers. In your view, what should be the Federal role in ground water protection?**

**A:** Number one, we should play a strong educational and technology role at the federal level. We need to know what we're talking about, so research is the beginning. Also, coordination is important since myriad agencies are involved. At USDA we have put together a very strong group—with representatives of eight or nine agencies—to look at ground water, ranging from researchers to the people who will be responsible for imparting knowledge to farm producers in the field.

Regulation to protect ground water should be implemented more at the

State level rather than the Federal level. There's no way I can sit here in a Washington, D.C., office and decide what should be done in a certain area in California; the State would have a much better feel for that. However, I do think it is up to Federal policy makers to decide on an overall general strategy to be implemented at the State level, perhaps through a series of incentives....

**Q: As anyone who reads the newspapers knows, many farmers have serious economic difficulties right now. Realistically, given this kind of economic pressure, aren't environmental concerns likely to be low on farmers' lists of priorities?**

**A:** No. On the contrary, I think that farmers are having to become better managers from a business standpoint. At the same time, I see them becoming better managers from a conservation and environmental standpoint. They are going to be looking very closely at *all* their inputs to crop production, including farm chemical inputs, using just about everything in a more exacting manner. So as farmers become more efficient economically, I think they will become more efficient environmentally. I see this happening now.



## They Know Their Beans

BEANS AND brains are at work in southwestern Montana in ways that may bring big benefits to Montana's farmers, consumers, and environment.

Will the faba beans make it? Will the pintos and red kidneys thrive? And what about the great northern whites?

These are questions that may be answered when results come in late this fall at demonstration plots scattered throughout Madison, Jefferson, and Silver Bow Counties. Beans and other nitrogen-fixing legumes—winter peas, Burseem clover, black medic, lentils, rape seed, and flax—are being tested to determine their crop yields, marketing potential, and the extent of their nitrogen enrichment of the soil.

If highest expectations are realized, Montana's farmers will spend less money for fertilizer and they will have new cash crops to sell, consumers will buy the nutritious legumes for both animal feed and human consumption, and the environment will be improved with richer soils and less runoff of synthetic fertilizers into Montana's lakes, rivers, and streams.

The brains behind the bean explosion belong to two scientists at Montana State University and a soil conservationist from Circle, Mont., who, in her words, has "always been interested in legumes as an alternative to the dryland crop-fallow sequence."

When agronomist Meg Kirkendall, district conservationist for the Soil Conservation Service at

the McCone County field office, visited the State university 2 years ago, she was fascinated by what she saw: experimental legume plots tended by Ray Ditterline and Jim Simms of the university's Plant and Soil Science Department. She thought: why not greatly enlarge the scope of their work?

Early this year she helped the Jefferson Valley Conservation District apply for and receive a \$65,000 grant from the Montana State Department of Natural Resources and Conservation to expand the idea into demonstration plots. The 2-year project is sponsored by the Jefferson Valley Conservation District and receives strong input from a direct marketing farmer co-op, the Montana Agricultural Producers, Inc. (MAGPI). Other supporters include the Headwaters Resource Conservation and Development Area and the Montana State University Extension Service. Costs covered by the grant include some compensation to farmers for the use of the twenty 10- and 20-acre demonstration plots; the purchase of seeds; and the development of a statewide information program.

"We expect that low-input farming can be as good for the farmers' pocketbook as it is for the soil," said Karl Ohs, chairman of MAGPI. "Our aim is to find ready markets for the legumes that do best in the demonstration plots. Meanwhile, farmers are asking us two important questions: 'Can you sell what we grow? Will there be enough to sell to make a real impact in Montana and beyond?' We'll have the answers to those questions soon."

**Shirley Foster Fields**, public affairs specialist, SCS, Washington, D.C.

## Harvesting Tomatoes in Winter

FINDING FRESH tomatoes in Mississippi in the winter used to be impossible. But that was before Charles and Jewel Case of Franklin County, Miss., began hydroponic farming. You can now buy fresh tomatoes at their fruit and vegetable stand in the middle of winter.

Hydroponic farming is growing plants in water and fertilizer instead of soil. It is one of several farming alternatives being promoted in Franklin County by the Southwest Resource Conservation and Development (RC&D) Area Council—a rural development program administered through the Soil Conservation Service. The



Jewel and Charles Case of Franklin County, Miss., examine their first crop of hydroponic greenhouse tomatoes.

RC&D area has been sponsoring a series of workshops and meetings to promote the production of high-yielding specialty crops such as blueberries, muscadines, peppers, and cucumbers.

The Cases learned about the hydroponic greenhouse method of farming in the spring of 1987 at one of the meetings on specialty crops. Hard work and long hours on the job have since paid off. The Cases began harvesting tomatoes in December 1987, with their 600 plants producing about 350 pounds of tomatoes per week. Their goal is to produce 3,000 pounds per crop.

In the Cases' operation, sand and gravel substitute for soil. They use one greenhouse for germination, planting, and housing the liquid fertilizer solution and another greenhouse for growing the crop.

Charles recommends that anyone interested in growing hydroponic tomatoes be prepared to spend many hours caring for the plants. "It isn't a business that you can go off and leave for a couple of days," he cautions. "It's very time consuming and takes a lot of dedication."

A brochure recently published by the RC&D area and Alcorn State University in cooperation with SCS and other agencies will help make operators of small farms in the area aware of other alternative crops and provide updates on conservation practices that reduce erosion and improve water quality.

**Jeannine May**, public affairs specialist, SCS, Jackson, Miss.

## Fishing for Alternatives

THE CURRENT FARM economy has the agricultural community searching for alternative sources of income. At Virginia State University, an 1890 land-grant institution near Petersburg, Va., the search has led to aquaculture.

Several faculty members began their investigation into the economic possibilities of fish farming by contacting the Soil Conservation Service for advice and technical assistance. They felt that farm ponds built for recreation, irrigation, and fire protection held high potential for fish production.

Through the James River Soil and Water Conservation District, SCS helped the researchers obtain a list of farmers willing to let their ponds be used for cage-culturing or for stocking trout over the winter.

University officials then conferred with SCS to plan a 40-pond aquaculture complex.

SCS worked closely with the university's fisheries scientist, Scott Newton, to identify the needs of the aquaculture complex. The SCS design included twenty  $\frac{1}{8}$ -acre ponds and twenty  $\frac{1}{4}$ -acre ponds on the university's Randolph Farm. The ponds use the Appomattox River as a water source, and drainage is completed through a central drainage system.

The 20 ponds currently in operation draw widespread interest from local farmers and government officials. With an increasing demand for fresh fish and a strategic marketing location, researchers at Virginia State University may have hooked a brighter future for Virginia's farmers.

**John D. Dondero**, district conservationist, SCS, Prince George, Va.



Filling one of the ponds in the new aquaculture complex of Virginia State University are Scott Newton, left, fisheries scientist at the university, and Dallis Wallace, SCS soil conservation technician from the Prince George, Va., field office.



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# Lowdermilk Remembered

JULY MARKS the 100th anniversary of the birth of Walter Clay Lowdermilk (1888-1974), an international leader in soil and water conservation and assistant chief of the Soil Conservation Service from 1933 to 1937.

In the 1920's, Lowdermilk spent 5 years in China researching the source of the Hwang Ho (Yellow) River's tremendous silt load, which increased flooding and fouled irrigation works—contributing to periodic famine. The results of his field experiments, which compared runoff and erosion on protected temple forests to cultivated fields, won him an international reputation.

In addition to being an honored scientist, Lowdermilk was also an educator. He translated his technical and scientific understanding of the processes and consequences of soil erosion into messages for the public. Among his many writings, perhaps the best known is a 30-page pamphlet entitled "Conquest of the Land Through 7,000 Years." Over a million copies of this publication have been printed and distributed.

The pamphlet was based on an 18-month trip Lowdermilk took to Europe, the Mediterranean countries, and the Far East. There he studied past land use practices—where, as he said, "a civilization writes its record on the land." Understanding that record and acting in accord with its lessons could lead to a permanent, enduring agriculture.

**Douglas Helms,**  
historian, SCS, Washington, D.C.

## Meetings

<b>September</b>	10 - 15	International Association of Fish and Wildlife Agencies, Toronto, Ontario, Canada
	18 - 20	The Fertilizer Institute, Los Angeles, Calif.
	21 - 23	National Waterways Conference, Inc., Nashville, Tenn.
	25 - 26	Association of State Dam Safety Officials, Manchester, N.H.
	26 - 29	"Combustion Processes and the Quality of the Indoor Environment" APCA, Niagara Falls, N.Y.
	29 - 30	Pacific Northwest American Geophysical Union, Victoria, British Columbia, Canada
<b>October</b>	5 - 8	Annual Meeting of the National Council for Geographic Education, Salt Lake City, Utah
	8 - 11	Farm and Industrial Equipment Institute, Boca Raton, Fla.
	24 - 25	Freshwater Foundation, St. Paul, Minn.
	31 - Nov. 3	The Geological Society of America, Denver, Colo.
<b>November</b>	6 - 9	1988 International Irrigation and Technical Conference, Las Vegas, Nev.
	13 - 15	The American Society of Farm Managers and Rural Appraisers, Inc., Indianapolis, Ind.
	13 - 15	The National Association of State Universities and Land-Grant Colleges, Dallas, Tex.
	13 - 16	National Forest Producers Association, Ft. Lauderdale, Fla.
	14 - 17	The American Forestry Association Members Meeting, Wash., D.C.
	15 - 18	International Conference on Tidal Hydrodynamics, Gaithersburg, Md.
	15 - 19	North American Lake Management Society, St. Louis, Mo.
	16 - 20	National Association of Biology Teachers, Chicago, Ill.
	27 - Dec. 2	American Society of Agronomy, Crop Science Society of America, Anaheim, Calif.
	27 - Dec. 2	American Institute of Chemical Engineers, Wash., D.C.